larger. As I did not know this species except from description I sent Miss Braun specimens of the present species for comparison and she was good enough to give me the following notes: "*Quadrigemina* is much smaller and paler in color; the second costal patch is relatively a little larger than in *althaeae* and the dorsal patch of raised scales is slightly more posterior. In spite of the almost identical position and extent of the markings the two do not look alike and I believe they are distinct species."

Caterpillar. The free feeding mature caterpillar is 6 mm. long. Head light yellow with black continuous eyespots. Thoracic shield light gray with numerous (20) small black dots. Body light gray with darker gray transverse band across each joint, on which the large whitish tubercles stand out prominently. Setae blackish. Legs gray with two transverse darker lines and with last joint yellow. Abdominal legs well developed, normal in number, each with two posterior and one anterior crotchet. Anal legs with but one crotchet.

Cocoon 5 mm. long, white, with a yellowish tint, loosely woven with but slight indicated longitudinal ridges.

The species appears to be doing considerable damage to Hollyhock in California, skeletonizing the leaves, As Hollyhock is not a native plant, the normal foodplant of this *Bucculatrix* will probably be found to be some other malvaceous plant.

NOTES ON THE INSECT FAUNA OF BANK SWALLOWS' NESTS IN VIRGINIA.

By T. E. Snyder and R. C. Shannon, *Bureau of Entomology.*

The waters and banks of the beautiful and historic Potomac River in the vicinity of Washington will be long remembered by those who have explored them for wild plant or animal life. The brightest and most cheerful denizens of the wooded shores of the river are the great variety of beautiful song birds. On the stretch of river extending between Georgetown and Chain Bridge one of the most noticeable and companionable of these birds is the bank swallow (*Riparia riparia* (Linn.) Sharp and Wyatt). This cosmopolitan bird excavates primitive nests in the soil of the hillsides of the Virginia shore where the trap rock has been quarried, leaving steep, rocky bluffs. The bird is not at all shy and often flies near boats.

During the spring, summer and autumn these twittering swallows are constantly on the wing from dawn until night, gracefully skimming over the surface of the water in search of insects which they catch while flying.

The horizontal rows of openings to the primitive nests may be

plainly seen from the river—about 65 feet below. The birds are gregarious and many nests are close together just below the crest of the bluff where the sandy soil cover of the rock has been exposed by the blasting out of the hillsides. The holes are out of reach of one on the crest of the bluff and extend about one foot nearly horizontally into the hill. The openings are just large enough to admit the mature bird. The nest material consists of feathers (chicken), soft straw, oak and chestnut catkins, etc.

It was thought that these nests might contain an insect fauna of interest, so early in June, 1916, one of the writers, after being lowered over the bluff on a rope, explored them.

The commonest insect in the nests is a Staphylinid beetle determined by Dr. A. Fenyes as *Microglotta* n. sp. A species in this same genus occurs in nests of this swallow in Europe. The insect is probably predaceous on other insects occurring in the nests. Both larvae and adults were found, not only in the nest material but also in and on the soil beneath.

The Danish entomologist, E. C. Rosenburg, in 1913, published an interesting paper[1] in which are included many notes on the beetle fauna of the nests of various animals. Dr. A. Böving has kindly referred us to this article and has translated some of the notes.

The bank swallow "Digesvalens" (= *H. riparia*) occurs in Denmark and in its nests the Staphylinid beetle *Microglossa nidicolla* Fairm. is very common. On July 9, larvae were found in numbers. In a gravel-pit near Ravneholm in November, 4 specimens of a variety of this beetle with black wings were found in the nest of this bird.

Microglossa pulla Gyll. has been found in birds' nests in hollow trees. Some specimens of *Microglossa marginalis* Gyll. (= *rufipennis* Kr., Heer) were found in a bird's nest in a hollow tree (*Alnus*).

Among the many interesting records of the beetle fauna of nests of other animals are notes of the occurrence of species in fox burrows, the nests of moles and mice, wasps' and bees' nests, and in the burrows of the wood-boring larvae of a moth (*Cossus*). The works of previous writers on the beetle fauna of the nests of mammals and birds are referred to by Rosenburg.

Larvae, cocoons and adults of a flea, tentatively determined by F. C. Bishopp as *Ceratophyllus* sp., come next in order of abundance. The active larvae crawl through the nest material but

[1] Rosenburg, E. C. ("Contribution to the knowledge of the biology, metamorphosis, and taxonomy of beetles, III.") "Entomologiske Meddelelser," vol. 10, p. 37, Copenhagen, 1913.

also occur in the soil beneath. The dark colored, oval, oblong cocoons spun by the larvae, to which particles of sand and dust are attached, were sifted from the nest material and from sand; mature larvae were in the cocoons early in June and on June 28, 1916. These numerous fleas must be very troublesome to both old and young birds. This flea is closely related to *Ceratophyllus gallinae*, but apparently is distinct.

Lepidopterous larvae were found in the feathers of the nest material but were not common. They were determined by C. Heinrich as a species of the family *Tineidae*. These larvae feed on the feathers.

Hymenopterous parasites were reared from the nest material; probably they were parasitic on the Lepidopterous larvae.

On the nearly mature nestlings parasitic Mallophaga were found to be common. The species is *Menopon dissimile* Kellogg, according to J. H. Paine. This parasite also occurs on the purple martin (*Progne subis*), a bird which probably once nested in holes in cliffs. The Mallophaga may be more easily located on the outstretched wings of the birds; they rapidly retreat to the base of the feathers when exposed.

Adults of the Staphylinid beetle were found flying about the entrance to the swallows' nests at 6 P.M. on July 11, 1916.

On June 22, 1918, the swallows' nests were again visited. Larvae of the Staphylinid *Microglotta* and larvae and cocoons of the flea *Ceratophyllus* were common.

H. S. Barber on a later trip June 27, 1918, with T. E. Snyder, found the young of an antlion, which he believes to be *Dendroleon* sp., on the soil beneath nest material. The young had not dug a pit but was free, being covered, however, with débris and dried bodies of its prey. It is undoubtedly predaceous on other insect life in the nests. At this date most of the birds were able to fly and had left the nests.

In order to know in what conditions the nests were in the winter, on December 23, 1918—a bright warm day—the nests were visited. One living adult flea was the only insect found in the nests—which the birds had abandoned in the autumn. Flea cocoons found were all empty. The nest material and the soil beneath were carefully sifted, the ground not being frozen.

NEW GENERA AND SPECIES OF ICHNEUMON FLIES (HYM.).

By R. A. Cushman, *Bureau of Entomology, Washington, D. C.*

This paper contains the descriptions of three new genera, three new species, and a new variety of Ichneumonidae and one new species of Braconidae.